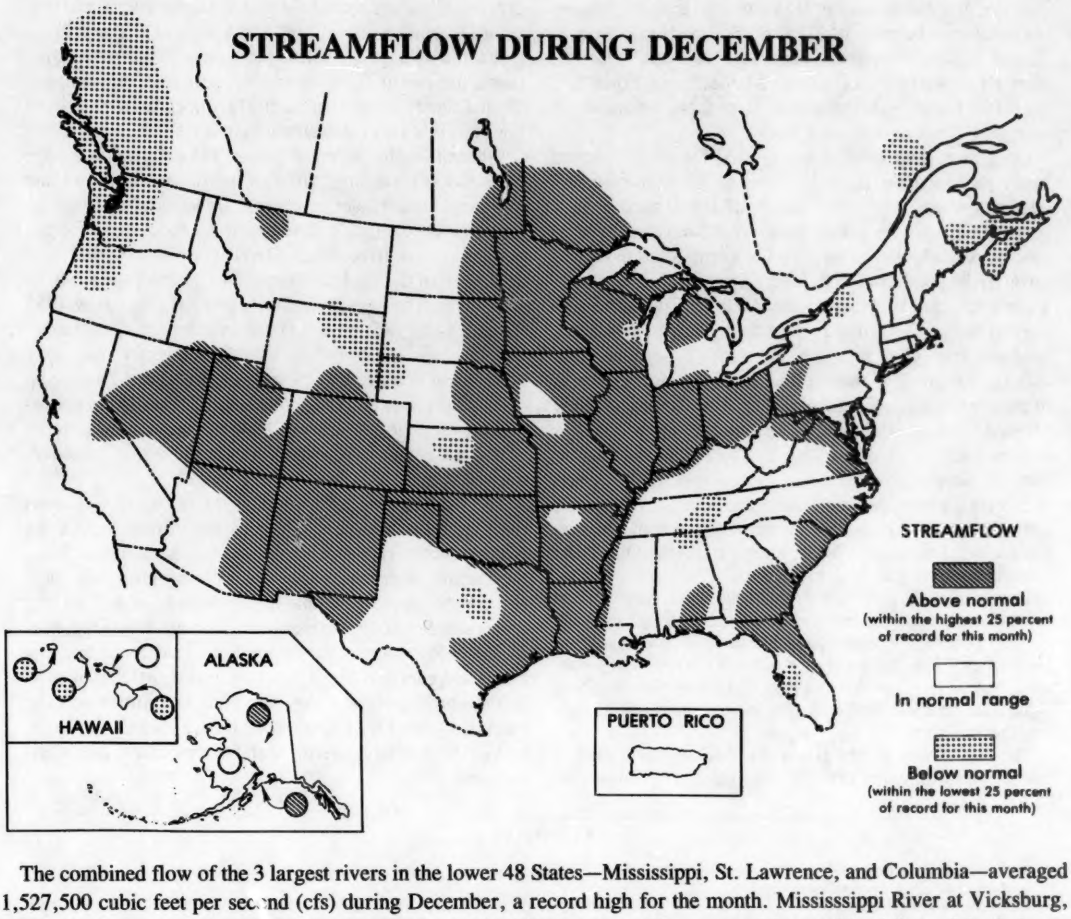
National Water Conditions

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

DECEMBER 1985

STREAMFLOW DURING DECEMBER



The combined flow of the 3 largest rivers in the lower 48 States—Mississippi, St. Lawrence, and Columbia—averaged 1,527,500 cubic feet per second (cfs) during December, a record high for the month. Mississsippi River at Vicksburg, Mississippi, also set a record high for the month—1,184,200 cfs—about 78 percent of the combined flow of the 3 rivers.

Streamflow generally increased in Alaska, Oregon, California, Nevada, Arizona, Indiana, Kentucky, Tennessee, Alabama, Georgia, and Saskatchewan; was variable in Idaho, Wyoming, New Mexico, Texas, Arkansas, Mississippi, and the Carolinas, and generally decreased in the rest of the United States and southern Canada. About 86 percent of the index stations had flows in the normal to above-normal range, down from the 94 percent in those ranges for November.

The Snow River glacier-dammed lake on Alaska's Kenai Peninsula broke out and peaked at 12,000 cfs on December 3. The breakout occurs every three to four years, usually in September or October.

Contents of 72 percent of reporting reservoirs were at or above average for the end of December and only 26 percent reported a significant decline in contents during December. New York City's reservoir system was below average for the end of December despite an increase in contents during the month. The Delaware River Basin Commission terminated the basin's drought emergency, which had been in effect since May 13, 1985, on December 18. Contents of New York City's reservoir system on December 17 were at about 74 percent of normal maximum, the same as those for the end of December.

STREAMFLOW CONDITIONS DURING DECEMBER 1985

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Below-normal streamflow persisted only in parts of Hawaii, British Columbia, Montana, Wyoming, South Dakota, and Nebraska but flows moved into the below-normal range in parts of Hawaii, Washington, Oregon, Kansas, Texas, Wisconsin, Tennessee, Alabama, Quebec, New Brunswick, Nova Scotia, Maine, New York, and Florida. Three index stations (see table on page 3) recorded December record lows.

Only three index stations recorded December record highs (see table on page 3) even though above-normal streamflow persisted over much of the United States, centering around the tier of States from Louisiana to Minnesota, extending westward to California, and eastward through the southern Great Lakes States, West Virginia, Maryland, and Virginia to the Atlantic Coast. Above-normal streamflow also persisted in parts of Montana, south-central Canada, the Carolinas, Georgia, and Florida. Streamflow moved into the above-normal range in parts of Alaska, California, Arizona, Colorado, New Mexico, Texas, Alabama, Georgia, and Florida.

Flood stages, as designated by the National Weather Service, were exceeded on many rivers and small streams in Oregon, Idaho,Texas, Oklahoma, Kansas, Nebraska, Iowa, Missouri, Arkansas, Louisiana, Wisconsin, Illinois, Kentucky, Tennessee, Mississippi, Indiana, Ohio, the Carolinas, Georgia, and Florida.

Contents of 72 percent of reporting reservoirs were at or above average for the end of December and only 26 percent recorded a significant decline in contents during December. New York City's reservoir system was somewhat below average for the end of December despite a significant, but less than average, increase in contents during the month.

The Delaware River Basin Commission adopted a resolution terminating drought emergency regulations on December18 since reservoir storage, ground-water levels, and streamflows in the basin were in the normal range. The drought emergency had been in effect since May 13, 1985.

The combined flow of the three largest rivers in the lower 48 States—Mississippi, St. Lawrence, and Columbia—averaged 1,527,500 cubic feet per second (cfs) during December, 33 percent above last month, 86 percent above median, and a December record high, exceeding that of December 1982 by 1,200 cfs. Mississippi River at Vicksburg, Mississippi, accounted for about 78 percent of the combined flow of the three rivers and also set a December record high (58 years) of 1,184,200 cfs (see table on page 3). These three large river systems account for runoff from more than half the conterminous United States and provide a useful check on the status of the Nation's surface-water resources.

Streamflow for calendar year 1985 (see map on page 3) shows several large areas of below-normal flows and one large area of above-normal flows, arcing from the Great Basin/Colorado River basin to encompass the upper Mississippi River basin, Red River of the North basin, and much of the St. Lawrence River basin upstream from Lake Erie. The map is similar to that for water year 1985 (September 1985, page 11) but indicates that the calendar year was somewhat wetter than the water year. This conclusion is borne out by the fact that about 59 percent of the index stations reported flows in the normal to above-normal range for water year 1985 while about 64 percent of the index stations reported flows in the normal to above-normal range for calendar year 1985.

The four hydrographs on page 11 illustrate well both the variability and persistence of streamflow across the Nation both during December and for the calendar year: Skykomish River near Goldbar, Washington, was at a December record low but in the normal range for the calendar year;Tongue River near Dayton, Wyoming, was in the below-normal range for both December and the calendar year; Muskegon River at Evart, Michigan, was in the above-normal range for both December and the calendar year; Deep River at Moncure, North Carolina, was in the normal range for both December and the calendar year.

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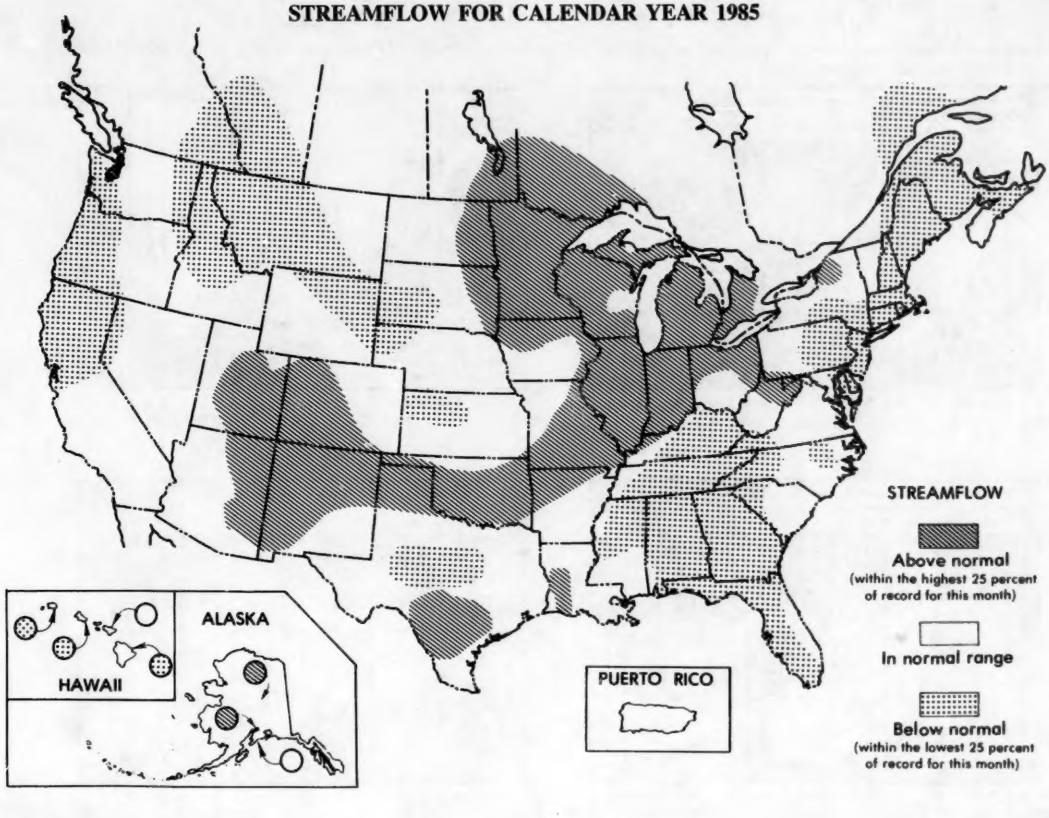
Provisional data; subject to revision

NEW EXTREMES DURING DECEMBER 1985 AT STREAMFLOW INDEX STATIONS

Station number	Stream and place of determination	Drainage area (square miles)	Years of record	Previous December extremes (period of record)		December 1985			
				Monthly mean in cfs (year)	Daily mean in cfs (year)	Monthly mean in cfs	Percent of median	Daily mean in cfs	Day
	LOW FLOWS								
06454500	Niobrara River above Box Butte Reservoir, Nebraska.	1,400	40	22.3 (1979)	14.0 (1979)	18.2	51	16.0	17
08EF001	Skeena River at Usk, British Columbia, Canada.	16,300	43	4,308 (1970)	2,920 (1948)	4,025	45	3,037	10
12134500	Skykomish River near Gold Bar, Washington.	535	58	1,670 (1928)	425 (1936)	1,320	27	1,000	16
	HIGH FLOWS								
07289000	Mississippi River at Vicksburg, Mississippi.	1,140,500	58	1,145,900 (1982)	1,399,000 (1982)	1,184,200	239	1,310,000	14
09180500	Colorado River near Cisco, Utah	24,100	74	5,761 (1984)	7,400 (1966)	5,944	190	7,900	1
15258000	Kenai River at Cooper Landing, Alaska.	634	38	2,904 (1976)	5,940 (1976)	3,550	396	7,860	3

STREAMFLOW FOR CALENDAR YEAR 1985

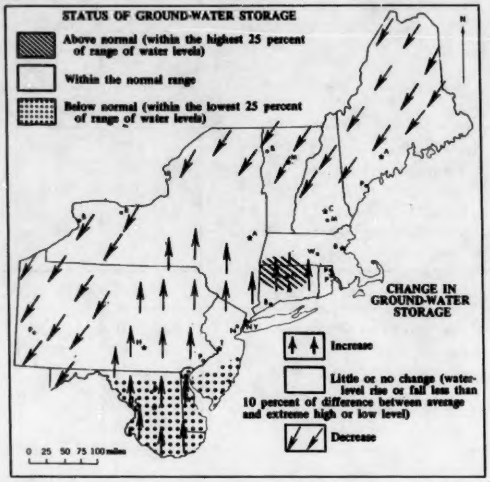


GROUND-WATER CONDITIONS DURING DECEMBER 1985

Ground-water levels continued to rise in most of Connecticut, and in south-central Massachusetts, southeastern New York State, eastern Pennsylvania, and eastern Maryland. (See map.) Elsewhere in the Northeast, levels fluctuated only slightly except for a predominantly declining trend in most of northern New England, northern and western New York, and western Pennsylvania. Near the end of the month, levels in most wells were within the normal range of levels for this time of year. Exceptions included above-average levels in northern Connecticut and below-average levels in Delaware, southern New Jersey, and eastern and central parts of Maryland.

In the southeastern States, ground-water levels rose in Virginia and rose in most key wells in Georgia; trends were mixed in other States. Water levels were above average in Kentucky and North Carolina, and below average in Arkansas. Levels were mixed with respect to average in other southeastern States. A new low level for December was reached in the key well near Memphis, Tennessee.

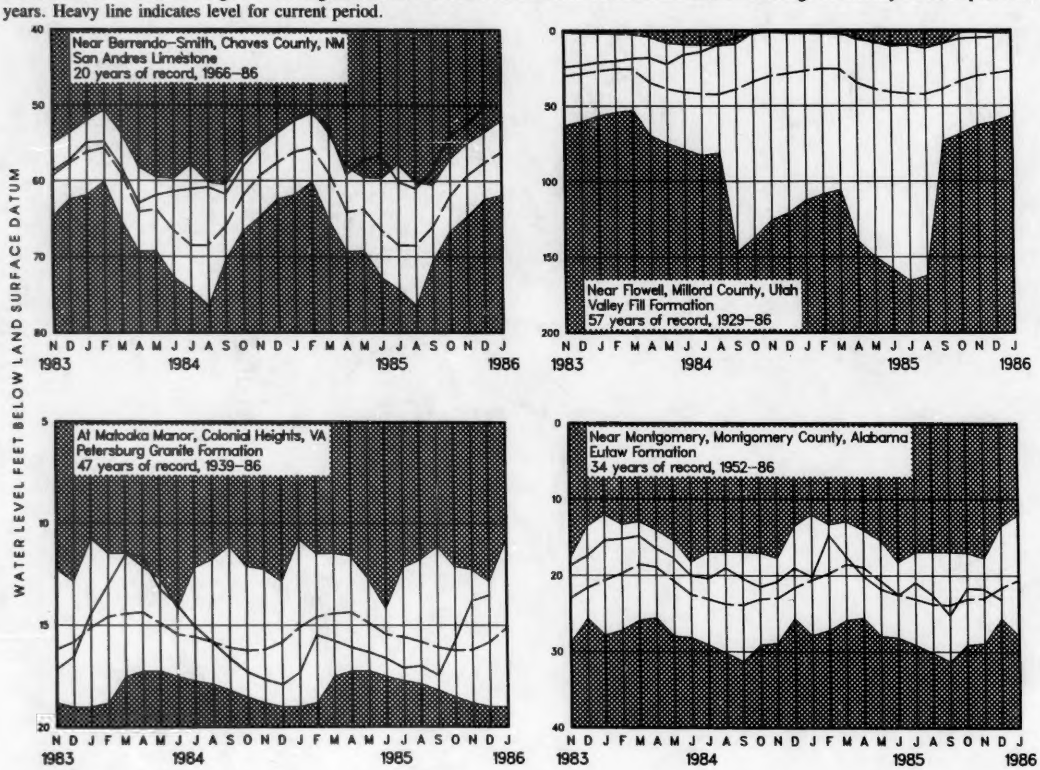
Among the central and western Great Lakes States, ground-water showed mixed trends in Minnesota, Wisconsin, and Michigan, and declined in other States. Water levels were normal or above normal in Wisconsin and Michigan, and in most of Indiana. Levels were mixed with respect to average in other States. Two new December high ground-water levels were recorded in Michigan.



Map shows ground-water storage near end of December and change in ground-water storage from end of November to end of December.

MONTH-END GROUND-WATER LEVELS IN KEY WELLS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates average of monthly levels in previous years. Heavy line indicates level for current period.



In the western States, ground-water levels rose in Nevada, and declined in Idaho and North Dakota. Water levels showed mixed trends in other western States. Levels were above average in Washington and Nebraska, and below average in North Dakota. Levels were mixed with respect to average in other western States. New high water levels for December were established in Nevada, Utah, and New Mexico. New December low levels were recorded in Kansas, New Mexico, and Texas.

Provisional data; subject to revision

WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN THE CONTERMINOUS UNITED STATES—DECEMBER 1985

Aquifer and Location	Water level in feet with reference to land-surface datum	Departure from average in feet	Net change in water level in feet since:		Year records began	Remarks
			Last month	Last year		
Glacial drift at Hanska, south-central Minnesota.	−6.12	+2.30	−0.90	+1.32	1942	
Glacial drift at Roscommon in north-central part of Lower Peninsula, Michigan.	−3.70	+1.15	+0.34	+0.65	1935	December high.
Glacial drift at Marion, Iowa	−4.14	+2.21	−0.93	−0.78	1941	
Glacial drift at Princeton in northwestern Illinois.	−6.38	+7.53	−0.18	+2.57	1943	December high.
Petersburg Granite, southeastern Piedmont near Fall Zone, Colonial Heights, Virginia.	−13.50	+2.48	+0.29	+4.39	1939	
Glacial outwash sand and gravel, Louisville, Kentucky (U.S. well no. 2).	−17.29	+8.28	−0.25	−0.46	1946	
500-foot sand aquifer near Memphis, Tennessee (U.S. well no. 2).	−104.50	−15.33	−0.03	−0.53	1941	December low.
Granite in eastern Piedmont Province, Chapel Hill, North Carolina (U.S. well no. 5).	−42.10	+1.43	+0.72	−1.33	1931	
Sparta Sand in Pine Bluff industrial area, Arkansas.	−220.50	−14.85	−4.80	+8.40	1958	
Eutaw Formation in the City of Montgomery, Alabama (U.S. well no. 4).	−23.2	−1.7	−1.5	−4.2	1952	
Limestone aquifer on Cockspur Island, Savannah area, Georgia (U.S. well no. 6).	−31.60	+5.06	+2.62	+1.10	1956	
Sand and gravel in Puget Trough, Tacoma, Washington.	−101.96	+8.17	+0.74	−1.48	1952	
Pleistocene glacial outwash gravel, North Pole, northern Idaho (U.S. well no. 3).	−460.6	+0.8	−1.0	−6.5	1929	
Snake River Group: Snake River Plain Aquifer, at Eden, Idaho (U.S. well no. 4).	−121.8	−4.5	.....	−0.1	1957	
Alluvial valley fill in Flowell area, Millard County, Utah (U.S. well no. 9).	−4.27	+23.22	+0.55	−4.87	1929	
Alluvial sand and gravel, Platte River Valley, Ashland, Nebraska (U.S. well no. 6).	−5.90	+0.30	−0.10	−1.20	1935	
Alluvial Valley fill in Steptoe Valley, Nevada (U.S. well no. 3).	−7.78	+5.24	+0.37	+0.54	1950	December high.
Pleistocene terrace deposits in Kansas River valley, at Lawrence, northeastern Kansas.	−16.44	+4.52	−0.78	+3.91	1953	
Alluvium and Paso Robles clay, sand, and gravel, Santa Maria Valley, California (U.S. well no. 11).	−135.31	+ 9.17	−8.00	−38.57	1957	
Valley fill, Elfrida area, Douglas, Arizona (U.S. well no. 15).	−104.8	−25.3	0	+0.2	1951	
Hueco bolson, El Paso area, Texas	−265.06	−19.06	−0.62	−2.61	1965	December low.
Evangeline aquifer, Houston area, Texas	−313.70	−12.31	+1.48	−0.90	1965	

Provisional data; subject to revision

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF DECEMBER 1985

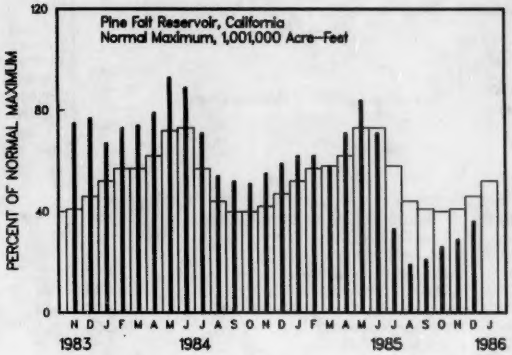
[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

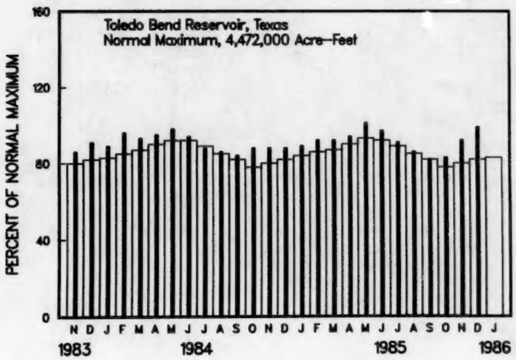
Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum[a] (acre-feet)
	End of Dec. 1985	End of Dec. 1984	Average for end of Dec.	End of Nov. 1985	
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs(P)	21	23	50	22	[b]226,300
QUEBEC					
Allard (P)	78	74	58	89	280,600
Gouin (P)	77	79	66	78	6,954,000
MAINE					
Seven reservoir systems (MP)	50	38	57	56	4,098,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	35	58	58	60	76,450
Lake Francis (FPR)	61	61	70	88	99,310
Lake Winnipesaukee (PR)	60	56	62	65	165,700
VERMONT					
Harriman (P)	63	76	60	86	116,200
Somerset (P)	73	86	67	85	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	78	62	72	73	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	69	52	52	73	786,700
Indian Lake (FMP)	81	82	61	94	103,300
New York City reservoir system (MW)	74	56	82	65	1,680,000
NEW JERSEY					
Wanaque (M)	99	54	71	93	85,100
PENNSYLVANIA					
Allegheny (FPR)	32	35	34	50	1,180,000
Pymatuning (FMR)	107	83	81	104	188,000
Raystown Lake (FR)	68	67	54	68	761,900
Lake Wallenpaupack (PR)	70	52	56	75	157,800
MARYLAND					
Baltimore municipal system (M)	72	94	85	72	261,900
NORTH CAROLINA					
Bridgewater (Lake James) (P)	92	90	77	94	288,800
Narrows (Badin Lake) (P)	82	91	94	97	128,900
High Rock Lake (P)	32	14	61	83	234,800
SOUTH CAROLINA					
Lake Murray (P)	82	79	61	82	1,614,000
Lakes Marion and Moultrie (P)	67	71	60	86	1,862,000
SOUTH CAROLINA–GEORGIA					
Clark Hill (FP)	73	47	53	65	1,730,000
GEORGIA					
Burton (PR)	83	69	53	91	104,000
Sinclair (MPR)	88	88	74	90	214,000
Lake Sidney Lanier (FMPR)	52	54	51	51	1,686,000
ALABAMA					
Lake Martin (P)	72	71	60	78	1,375,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	21	31	31	28	2,229,300
Douglas Lake (FPR)	12	12	11	27	1,394,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	50	44	38	50	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	41	38	32	44	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	35	40	39	26	1,478,000
WISCONSIN					
Chippewa and Flambeau (PR)	67	72	63	85	365,000
Wisconsin River (21 reservoirs) (PR)	78	73	54	92	399,000
MINNESOTA					
Mississippi River headwater system (FMR)	25	23	23	30	1,640,000
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	77	86	85	80	22,700,000
SOUTH DAKOTA					
Angostura (I)	49	71	72	48	127,600
Belle Fourche (I)	23	58	44	18	185,200
Lake Francis Case (FIP)	58	57	56	56	4,834,000
Lake Oahe (FIP)	73	81	....	74	22,530,000
Lake Sharpe (FIP)	100	101	96	100	1,725,000
Lewis and Clarke Lake (FIP)	93	91	91	92	477,000

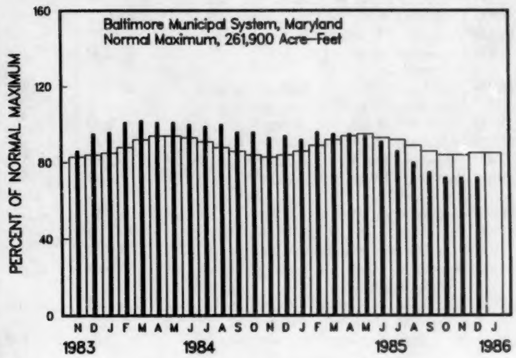
Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum[a] (acre-feet)
	End of Dec. 1985	End of Dec. 1984	Average for end of Dec.	End of Nov. 1985	
NEBRASKA					
Lake McConaughy (IP)	80	82	71	77	1,948,000
OKLAHOMA					
Eufaula (FRP)	104	113	84	104	2,378,000
Keystone (FPR)	102	104	91	137	661,000
Tenkiller Ferry (FPR)	115	129	92	113	628,200
Lake Altus (FIMR)	20	7	47	16	133,000
Lake O'The Cherokees (FPR)	102	107	80	122	1,492,000
OKLAHOMA–TEXAS					
Lake Texoma (FMPRW)	92	97	90	95	2,722,000
TEXAS					
Bridgeport (IMW)	79	61	46	81	386,400
Canyon (FMR)	100	81	76	99	385,600
International Amistad (FIMPW)	84	58	84	73	3,497,000
International Falcon (FIMPW)	40	34	77	39	2,668,000
Livingston (IMW)	105	103	86	106	1,788,000
Possum Kingdom (IMPRW)	91	86	97	93	570,200
Red Bluff (PI)	23	29	28	22	307,000
Toledo Bend (P)	99	88	83	92	4,472,000
Twin Buttes (FIM)	12	9	31	12	177,800
Lake Kemp (IMW)	93	69	84	93	268,000
Lake Meredith (FWM)	31	35	38	30	796,900
Lake Travis (FIMPRW)	95	62	78	88	1,144,000
MONTANA					
Canyon Ferry (FIMPR)	76	76	86	79	2,043,000
Fort Peck (FPR)	74	86	84	75	18,910,000
Hungry Horse (FIPR)	74	77	77	82	3,451,000
WASHINGTON					
Ross (PR)	68	69	69	82	1,052,000
Franklin D. Roosevelt Lake (IP)	63	94	95	84	5,022,000
Lake Chelan (PR)	57	52	55	73	676,100
Lake Cushman (PR)	40	42	83	53	359,500
Lake Merwin (P)	103	100	96	92	245,600
IDAHO					
Boise River (4 reservoirs) (FIP)	54	52	58	53	1,235,000
Coeur d'Alene Lake (P)	17	28	56	55	238,500
Pend Oreille Lake (FP)	43	35	49	43	1,561,000
IDAHO–WYOMING					
Upper Snake River (8 reservoirs) (MP)	36	70	62	51	4,401,000
WYOMING					
Boysen (FIP)	76	80	75	77	802,000
Buffalo Bill (IP)	65	75	68	62	421,300
Keyhole (F)	29	41	43	29	193,800
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	60	67	48	59	3,056,000
COLORADO					
John Martin (FIR)	85	67	15	79	364,400
Taylor Park (IR)	65	64	54	64	106,200
Colorado-Big Thompson project (I)	74	84	56	74	730,300
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)	89	90	68	89	31,620,000
UTAH–IDAHO					
Bear Lake (IPR)	76	77	58	77	1,421,000
CALIFORNIA					
Folsom (FIP)	58	60	54	50	1,000,000
Hetch Hetchy (MP)	51	51	37	51	360,400
Isabella (FIR)	34	43	26	33	568,100
Pine Flat (FI)	36	59	47	29	1,001,000
Clair Engle Lake (Lewiston) (P)	61	78	73	64	2,438,000
Lake Almanor (P)	63	84	50	59	1,036,000
Lake Berryessa (FIMW)	75	86	79	74	1,600,000
Millerton Lake (FI)	64	48	54	46	503,200
Shasta Lake (FIPR)	55	71	68	49	4,377,000
CALIFORNIA–NEVADA					
Lake Tahoe (IPR)	56	73	48	55	744,600
NEVADA					
Rye Patch (I)	60	83	56	56	194,300
ARIZONA–NEVADA					
Lake Mead and Lake Mohave (FIMP)	90	91	70	92	27,970,000
ARIZONA					
San Carlos (IP)	89	82	20	84	935,100
Salt and Verde River system (IMPR)	83	88	40	82	2,019,100
NEW MEXICO					
Conchas (FIR)	86	62	78	85	330,100
Elephant Butte and Caballo (FIPR)	88	68	31	87	2,453,000

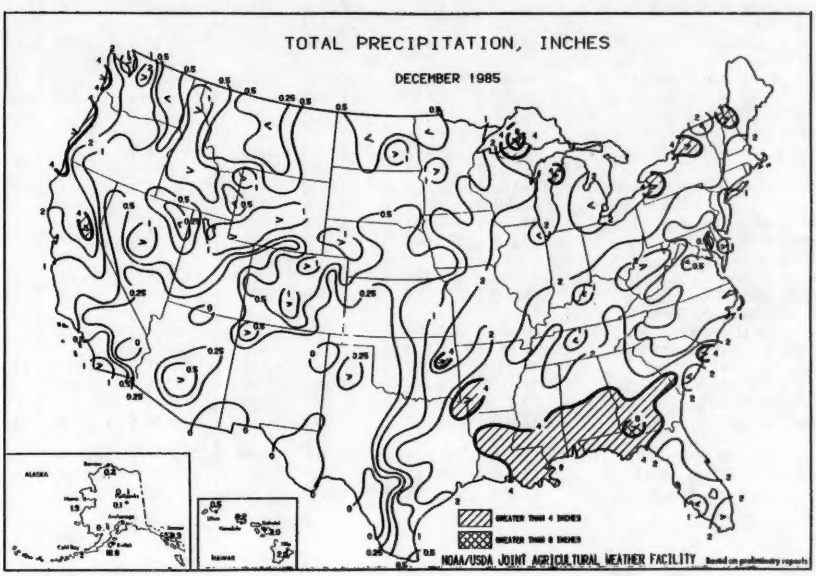
[a] 1 acre-foot = 0.0436 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second day.
[b] Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, NOVEMBER 1983 TO DECEMBER 1985









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FLOW OF LARGE RIVERS DURING DECEMBER 1985

Station number	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1980 (cubic feet per second)	December 1985					
				Monthly mean discharge (cubic feet per second)	Percent of median monthly discharge, 1951–80	Change in discharge from previous month (percent)	Discharge near end of month: Cubic feet per second	Discharge near end of month: Million gallons per day	Date
01014000	St. John River below Fish River at Fort Kent, Maine.	5,690	9,647	4,291	88	−22	2,850	1,842	31
01318500	Hudson River at Hadley, N.Y...........	1,664	2,909	2,620	106	−45	1,480	956	31
01357500	Mohawk River at Cohoes, N.Y.........	3,456	5,734	5,120	98	−20	2,150	1,389	31
01463500	Delaware River at Trenton, N.J..........	6,780	11,750	16,370	141	−7	6,780	4,382	31
01570500	Susquehanna River at Harrisburg, Pa..	24,100	34,530	47,000	138	+11	18,300	11,830	31
01646500	Potomac River near Washington, D.C.	11,560	[1]11,490	17,100	171	−60	6,500	4,200	31
02105500	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	5,005	6,910	178	−17	1,700	1,100	31
02131000	Pee Dee River at Peedee, S.C...........	8,830	9,851	15,700	210	+42	3,210	2,074	30
02226000	Altamaha River at Doctortown, Ga.....	13,600	13,880	25,570	322	+109	28,000	18,100	24
02320500	Suwannee River at Branford, Fla.......	7,880	6,987	8,720	272	+81	4,460	2,882	26
02358000	Apalachicola River at Chattahoochee, Fla.	17,200	22,570	21,000	124	+104	13,300	8,600	26
02467000	Tombigbee River at Demopolis lock and dam near Coatopa, Ala.	15,400	23,300	16,800	82	+54	7,550	4,879	31
02489500	Pearl River near Bogalusa, La...........	6,630	9,768	7,604	139	−30	6,260	4,045	31
03049500	Allegheny River at Natrona, Pa.........	11,410	[1]19,480	44,340	169	−1	20,100	12,990	30
03085000	Monongahela River at Braddock, Pa...	7,337	[1]12,510	24,760	167	−33	3,750	2,423	30
03193000	Kanawha River at Kanawha Falls, W.Va.	8,367	12,590	14,020	102	−37	5,750	3,716	26
03234500	Scioto River at Higby, Ohio............	5,131	4,547	9,674	239	−28	2,090	1,350	31
03294500	Ohio River at Louisville, Ky[2]...........	91,170	116,000	219,700	170	+7	79,080	51,110	26
03377500	Wabash River at Mount Carmel, Ill....	28,635	27,220	88,690	387	+44	28,500	18,420	31
03469000	French Broad River below Douglas Dam, Tenn.	4,543	6,798	5,317	81	−13	.....	.....	...
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wis.[2]	6,150	4,163	2,604	72	−41	.....	.....	...
04264331	St. Lawrence River at Cornwall, Ontario–near Massena, N.Y.[3]	299,000	242,700	273,600	114	−5	240,000	155,000	31
02NG001	St. Maurice River at Grand Mere, Quebec.	16,300	25,150	11,000	83	−23	16,300	10,530	31
05082500	Red River of the North at Grand Forks, N.Dak.	30,100	2,551	2,020	176	−16	1,990	1,286	19
05133500	Rainy River at Manitou Rapids, Minn.	19,400	12,830	15,500	158	−16	13,000	8,400	19
05330000	Minnesota River near Jordan, Minn....	16,200	3,402	2,676	410	−38	1,920	1,240	31
05331000	Mississippi River at St. Paul, Minn....	36,800	[1]10,610	11,870	244	−21	10,200	6,590	31
05365500	Chippewa River at Chippewa Falls, Wis.	5,600	5,100	6,242	198	−16	.....	.....	...
05407000	Wisconsin River at Muscoda, Wis......	10,300	8,617	11,830	182	−31	.....	.....	...
05446500	Rock River near Joslin, Ill...............	9,551	5,873	11,000	235	−34	6,000	3,900	31
05474500	Mississippi River at Keokuk, Iowa.....	119,000	62,620	63,400	174	−37	62,400	40,330	31
06214500	Yellowstone River at Billings, Mont...	11,796	7,038	3,150	104	−7	2,860	1,848	31
06934500	Missouri River at Hermann, Mo........	524,200	79,490	118,700	293	−22	82,800	53,520	31
07289000	Mississippi River at Vicksburg, Miss[4].	1,140,500	576,600	1,184,000	239	+57	858,000	554,500	31
07331000	Washita River near Dickson, Okla.....	7,202	1,368	1,163	301	−34	890	575	28
08276500	Rio Grande below Taos Junction Bridge, near Taos, N. Mex.	9,730	725	860	201	−10	800	520	31
09315000	Green River at Green River, Utah......	40,600	6,298	3,649	152	−1	4,000	2,600	18
11425500	Sacramento River at Verona, Calif.....	21,257	18,820	13,320	64	+65	8,850	5,719	26
13269000	Snake River at Weiser, Idaho............	69,200	18,050	18,100	117	+17	21,300	13,770	22
13317000	Salmon River at White Bird, Idaho.....	13,550	11,250	4,030	87	−21	3,340	2,158	31
13342500	Clearwater River at Spalding, Idaho...	9,570	15,480	10,700	169	+18	12,500	8,080	31
14105700	Columbia River at The Dalles, Oreg.[1,5]	237,000	193,100	69,700	81	−36	115,700	74,780	29
14191000	Willamette River at Salem, Oreg.......	7,280	23,510	25,700	59	+11	15,100	9,760	29
15515500	Tanana River at Nenana, Alaska........	25,600	23,460	10,840	161	−21	10,000	6,000	31
08MF005	Fraser River at Hope, British Columbia.	83,800	96,290	26,760	61	−41	25,640	16,570	30

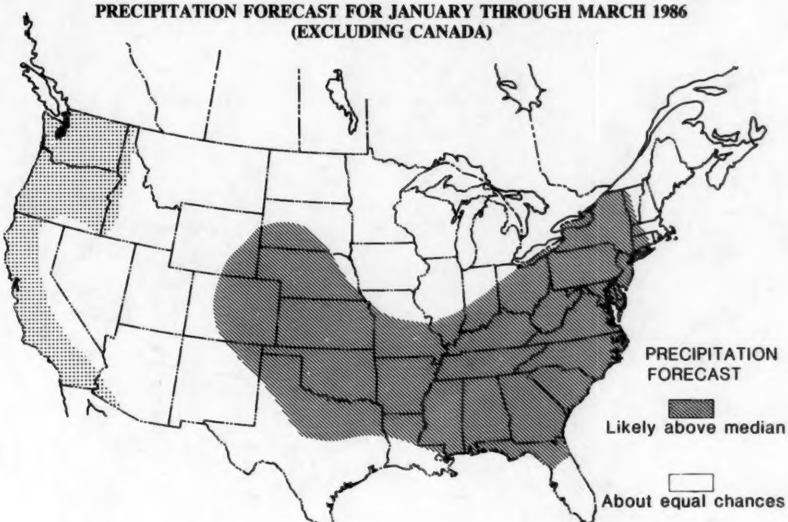
[1]Adjusted.
[2]Records furnished by Corps of Engineers.
[3]Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4]Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5]Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

DISSOLVED SOLIDS AND WATER TEMPERATURES, DECEMBER 1985, AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	December data of following calendar years	Stream discharge during month	Dissolved-solids concentration[a]		Dissolved-solids discharge[a]			Water temperature[b]		
			Mean (cfs)	Minimum (mg/L)	Maximum (mg/L)	Mean (tons per day)	Minimum (tons per day)	Maximum (tons per day)	Mean in °C	Minimum, in °C	Maximum, in °C
01463500	Delaware River at Trenton, N.J.	1985	16,400	75	104	3,810	1,840	7,620	3.0	0.0	6.5
	(Morrisville Pa.)	1944—84	13,030	62	138	. . . . .	631	20,500	. . .	0.0	12.0
		(Extreme yr)		(1983)	(1980)		(1964)	(1973)			
			[c]11,650								
04264331	St. Lawrence River at Cornwall,	1985	271,000	166	167	121,800	95,400	137,200	3.5	1.0	6.0
	Ontario, near Massena, N.Y.	1975—84	262,000	163	170	117,700	88,000	139,000	3.5	0.5	8.0
	(median streamflow at	(Extreme yr)		(1978)	(1975)		(1978)	(1981)			
	Ogdensburg, N.Y.)		[c]239,200								
07289000	Mississippi River at	1985	1,184,200	190	222	639,800	504,630	712,800	5.5	3.0	9.5
	Vicksburg, Miss.	1975—84	683,800	153	295	376,200	131,000	683,000	7.5	0.0	13.0
		(Extreme yr)		(1978)	(1980)		(1976)	(1982)			
			[c]495,500								
03612500	Ohio River at lock and dam 53,	1985	*478,100	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . .	. . .	. . .
	near Grand Chain, Ill. (stream-	1954—84	324,200	138	362	. . . . .	21,300	469,000	. . .	0.0	14.0
	flow station at Metropolis, Ill.)	(Extreme yr)		(1962)	(1969)		(1980)	(1977)			
			[c]286,000								
06934500	Missouri River at Hermann, Mo.	1985	119,000	273	379	107,000	71,400	204,000	3.5	1.0	7.0
	(60 miles west of	1975—84	70,350	222	770	70,630	34,600	237,000	3.5	0.0	14.0
	St. Louis, Mo.)	(Extreme yr)		(1982)	(1978)		(1980)	(1982)			
			[c]40,520								
14128910	Columbia River at Warrendale,	1985	165,000	99	111	46,000	31,100	61,700	2.2	1.1	3.2
	Oreg. (streamflow station at	1975—84	157,900	82	128	45,300	22,800	77,300	7.0	0.5	10.5
	The Dalles, Oreg.)	(Extreme yr)		(1975)	(1984)		(1978)	(1980)			
			[c]87,495								

[a]Dissolved-solids concentrations when not analyzed directly, are calculated on basis of measurements of specific conductance.
[b]To convert °C to °F: [(1.8 X °C) + 32] = °F.
[c]Median of monthly values for 30-year reference period, water years 1951—80, for comparison with data for current month.
*Dissolved-solids and water-temperature records are not available for December.

PRECIPITATION FORECAST FOR JANUARY THROUGH MARCH 1986 (EXCLUDING CANADA)



(From Monthly and Seasonal Weather Outlook Published by National Weather Service)

PESTICIDES IN THE NATION'S RIVERS, 1975—1980, AND IMPLICATIONS FOR FUTURE MONITORING

The abstract and figures are from the report, *Pesticides in the Nation's rivers, 1975—1980, and implications for future monitoring*, by Robert J. Gilliom, Richard B. Alexander, and Richard A. Smith, U.S. Geological Survey Water-Supply Paper 2271, 26 pages, 1985. This report may be purchased for $1.25 from Eastern Distribution Branch, Text Products Section, U.S. Geological Survey, 604 S. Pickett St., Alexandria, VA 22304 (check or money order payable to U.S. Geological Survey); or from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 (payable to Superintendent of Documents).

ABSTRACT

Water samples were taken four times per year and bed-sediment samples two times per year during 1975—80 at 160 to 180 stations on major rivers of the United States (see figure 1). Samples were analyzed for 18 insecticides and 4 herbicides, which together accounted for about one-third of the total amount of all pesticides applied to major crops during 1975—80. Fewer than 10 percent of almost 3,000 water samples and fewer than 20 percent of almost 1,000 bed-sediment samples contained reportable concentrations of any of the compounds. The patterns of detection result from a combination of widely variable detection capabilities, chemical properties, and use. Most detections in water samples were relatively persistent yet soluble compounds: atrazine (4.8 percent of samples), diazinon (1.2), and lindane (1.1)(see table 1). Most detections in bed-sediment samples were of the hydrophobic and persistent insecticides: DDE (17 percent of samples), DDD (12), dieldrin (12), chlordane (9.9), and DDT (8.5). Only for atrazine in water, and for DDE, DDD, DDT, and chlordane in bed sediments, were geographic patterns of detection correlated ($p \leq 0.10$) with use on farms. Detections of organochlorine insecticides in both water and bed sediments appear to have erratically but gradually decrease during 1975—80. For the 1975—79 period, more stations had downtrends than had upstreams in bed-sediment levels of organochlorines. No clear trends were evident in concentrations of organophosphate insecticides or herbicides in either water or bed sediments. Findings suggest that future pesticide monitoring efforts must be responsive to changes in pesticides used and to geographic patterns of use. Different types of monitoring approaches are necessary for chemicals having different chemical and physical properties. Before an effective dynamic monitoring effort can be designed, however, selected case studies are needed to characterize and refine sampling and analytical capabilities for different types of chemicals, river environments, and sample types.

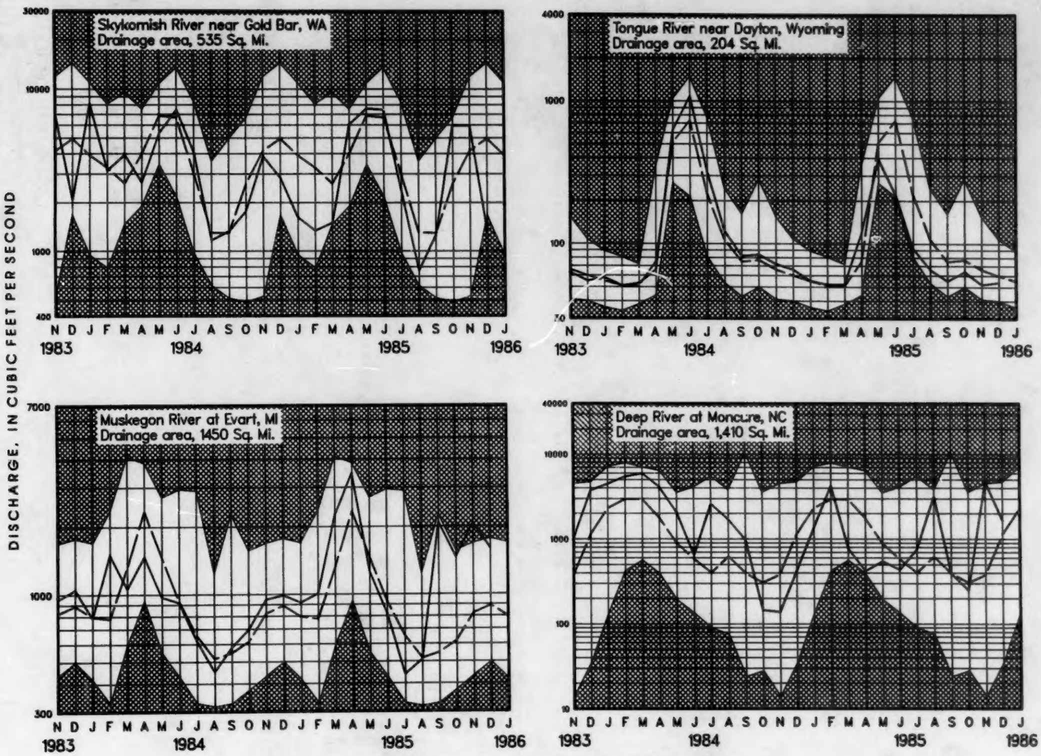
Table 1. National summary of detections of pesticides in water at Pesticide Monitoring Network stations, 1975—80

Chemical	Number of stations	Percent of stations with detections	Total number of samples	Percent of samples with detections
Organochlorine Insecticides				
Aldrin	177	2.3	2,946	0.2
Dieldrin	177	2.3	2,945	.2
Chlordane	177	.6	2,943	.0
DDD	177	4.0	2,720	.3
DDE	177	.6	2,715	.0
DDT	177	2.8	2,721	.4
Endrin	180	1.1	2,950	.1
Heptachlor epoxide.	177	4.5	2,946	.3
Lindane	177	8.5	2,945	1.1
Methoxychlor	172	.0	2,761	.0
Toxaphene	177	2.8	2,946	.4
Organophosphate Insecticides				
Diazinon	174	9.8	2,859	1.2
Ethion	174	.6	2,823	.1
Malathion	174	.6	2,859	.1
Methyl parathion.	174	2.7	2,861	.1
Methyl trithion.	174	.0	2,822	.0
Parathion	174	.6	2,856	.0
Trithion	174	1.1	2,819	.1
Triazine and Chlorophenoxy Herbicides				
Atrazine	144	24	1,363	4.8
2,4-D	186	2.4	1,764	.2
2,4,5-T	186	.6	1,765	.1
Silvex	167	.6	1,768	.1

Figure 1. Locations of stations in the Pesticide Monitoring Network.

SURFACE WATER – MONTHLY MEAN DISCHARGE IN KEY STREAMS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951–80. Heavy line indicates mean for current period.



NATIONAL WATER CONDITIONS

December 1985

Based on reports from the Canadian and U.S. Field offices; completed January 16, 1986

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EXPLANATION OF DATA

Cover map shows generalized pattern of streamflow for the month based on 18 index stream-gaging stations in Canada and 164 index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations that are located near the point shown by the arrows.

Streamflow for the current month is compared with the flow for the same month in the 30-year reference period, 1951–80. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile). Shorter reference periods are used for the Puerto Rico index stations because of the limited records available.

Flow higher than the lower quartile but lower than the upper quartile is described as being *within the normal range*. In the National Water Conditions, the median is obtained by ranking the 30 flows of each monthly of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the median. One-half of the time you would expect the flows for the month to be below the median and one-half of the time to be above the median.

Flood frequency analyses define the relation of flood peak magnitude to probability of occurrence or recurrence interval. Probability of occurrence is the chance that a given flood magnitude will be exceeded in any one year. Recurrence interval is the reciprocal of probability of occurrence and is the *average* number of years between occurrences. For example, a flood having a probability of occurrence of 0.01 (1 percent) has a recurrence interval of 100 years. Recurrence intervals imply no regularity of occurrence; a 100-year flood might be exceeded in consecutive years or it might not be exceeded in a 100-year period.

Statements about *ground-water levels* refer to conditions near the end of the month. The water level in each key observation well is compared with average level for the end of the month determined from the entire past record for that well or from a 30-year reference period, 1951–80. *Changes in ground-water levels*, unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data for December are given for six stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). Dissolved solids are minerals dissolved in water and usually consist predominantly of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. Dissolved-solids discharge represents the total daily amount of dissolved minerals carried by the stream. Dissolved-solids *concentrations* are generally higher during periods of low streamflow, but the highest dissolved-solids *discharges* occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at time of low flow.

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